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| 09/189,793 | 11/12/1998 | BYUNG KEUN LIM | K-039 | 5887 |

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| EXAMINER |
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ELALLAM, AHMED

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| ART UNIT | PAPER NUMBER |
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2668

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/189,793

Applicant(s)

LIM, BYUNG KEUN

Examiner

AHMED ELALLAM

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-32, 34-36, 38-40 and 43-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-32, 34-36, 38-40 and 43-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This communication is responsive to the Amendment filed on 11/14/2005.

Claims 30-32, 34-36, 38-40 and 47 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 30-32, 34-36, 38-40 and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omura US (5,235,615) in view of Nakajima et US (5,487,083). Hereinafter referred to Omura and Nakajima respectively.

Claims 30, 32, 34, 36, 38, 40 and 43:

Regarding claims 30 and 32, with reference to figure 1, Omura discloses a mobile communication system comprising a plurality of remote unit and a base station, a system in which the base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels) which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals (reverse communication channels),

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which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station, and that each of the remote-communications signals has its own unique chip codeword. For a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Claimed each of the plurality of reverse communication channels and each of the plurality of forward communication channels utilize one common frequency each of the plurality of reverse communication channels and each of the plurality of forward communication channels have a unique code; and the plurality of reverse communication channels and plurality of forward channels carry data simultaneously). (Examiner interpreted the same carrier frequency as being the claimed common frequency).

Regarding claim 34, 36, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remote unit (a remote unit has a transmitter that transmit on reverse channel and a receiver for receiving data on a forward channel) and a base station, See column 3, lines 32-47. Omura also discloses that for a particular two-way communications channel between a particular mobile and the base station, a unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Examiner interpreted the bi-directional two-way

communication as being the claimed the reverse communication channel and the forward communication channel are configured to carry data simultaneously).

Regarding claim 38 and 40, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remote and a base station, (base has a transmitter that transmit on reverse channel and a receiver for receiving data on a forward channel), See column 3, lines 32-47. The base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station. Omura further disclose that for a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Claimed the reverse communication channels and the forward communication channels have a unique code), Omura also discloses that the base station communicates to the plurality of remote units with the plurality of base-communications signals (forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base

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station. The plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station, See column 2, lines 38-63.

Regarding claim 43, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remote units and a base station, (base has a transmitter that transmit on reverse channel and a receiver for receiving data on a forward channel), See column 3, lines 32-47. The base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station. (Examiner interpreted the Omura "same " carrier frequency for uplink and downlink channels as being the claimed common frequency channel, and the Omura's base-communications signals and the plurality of remote-communications signals using the same carrier frequency as being the claimed common channel includes a reverse communication channel and forward communication channel that utilize the common channel (since the claimed common channel is referred to as frequency channel in the specification)). Omura further disclose that for a particular two-way communications channel between a particular

mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63.

As to claims 30, 32, 34, 36, 38, 40 and 43, the difference between Omura and claims 30, 32, 34, 36, 38, 40 and 43 is that Omura, while indicating that the unique code word can be the same for a pair of forward and reverse channels, it does not specify that each reverse channel and forward channel have unique code to identify the channels as a reverse communication channel and forward communication channel respectively).

However, with reference to figure 1A, Nakajima discloses a radio zone (2a) in which a common radio frequency f_1 is used, and wherein a spectrum spreading code group C_{11} having a plurality of spectrum spreading codes C_{111} , C_{112} , ..., C_{11m} that define a plurality of communication channels, each communication channel is assigned two spectrum spreading codes which define a pair of forward (from the mobile to the base station) and reverse (from the base station to the mobile station) channels. See column 3, lines 63-67 and column 4, lines 1-11. (Claimed each reverse communication channel having a unique code to identify the channel as a reverse communication channel, and each of forward communication channel having a unique code to identify the channel as forward communication channel).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made to have the forward and reverse channel of Omura each separated by unique code word as taught by Nakajima in lieu of the same code for

both reverse and forward channels so to avoid interference between adjacent radio zones and to increase the capacity. (Nakajima, column 3, lines 59-62).

Note: as to claims 34 and 43, Nakajima shows only one mobile within radio zone 2a, it implicitly discloses a plurality of mobile stations within the same radio zone 2a, in addition, the mobiles within the radio zone 2a use the same frequency, each communication channel between the mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel, thus the newly added features involving third code and fourth codes are met by Nakajima.

Claims 31, 35, and 39:

Regarding claim 31, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claim 35, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (Claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claim 39, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (Claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claims 44-47, Nakajima implicitly discloses a plurality of mobile stations within the same radio zone 2a, each communication channel between each mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel.

Response to Arguments

2. Applicant's arguments filed on 11/14/2005 have been fully considered but they are not persuasive.

Applicant argues that the combination of Omura and Nakajima do not teach or suggest all the feature of independent claim 30 as well as the other independent claims 34, 38 and 43.

Applicant stated on page 9: *"More specifically, Omura relates to code division that utilizes a unique code given to each user. The Office Action modifies Omura by applying Nakajima, without any basis in the prior art, in order to show that a reverse channel and a forward channel have separate codes. However, Nakajima only discloses that a communication channel may be assigned two spectrum spreading codes to define a forward channel and a reverse channel. The teaching may not be simply modified into Omura. Omura's CDMA system does not suggest a full duplex system such as a CDD system. Additionally, Nakajima relates to a TDMA type of system. Therefore, there is no suggestion for modifying Omura's CDMA system to include additional features of Nakajima as alleged. Rather, the only suggestion to include the combined features (and therefore to modify Omura) is provided by applicant's own*

specification. That is, the Office Action clearly has chosen respective features from different references and combined those references based on applicant's own teaching. Applicant respectfully submits that there is no suggestion in the prior art to modify Omura's CDMA system so as to include unique codes being assigned to reverse and forward channels as recited in independent claim 1." Emphasis added.

Examiner respectfully disagrees, the invention as claimed is unpatentable over Omura in view of Nakajima, the alleged lack of suggestion in the prior art to modify Omura is traversed in that the main feature of the claimed invention is clearly taught by Nakajima, that is as Applicant admits "*Nakajima discloses that a communication channel may be assigned two spectrum spreading codes to define a forward channel and a reverse channel*". The suggestion/motivation to combine is clearly stated since *the reverse and forward codes are used to avoid interference between adjacent radio zones* as taught by Nakajima (column 3, lines 59-62). It follows that, contrary to Applicant, that Examiner relied on the teaching of Nakajima to meet the claimed invention and not based on Applicant's own teaching.

Examiner also notes that, if the teaching of Nakajima is to be used for only one radio zone, for example radio zone 2a, Nakajima may be regarded as anticipating the claimed invention as indicated in independent claims, because, each communication channel would be assigned two spectrum spreading codes to define a forward channel and a reverse channel, in addition to having a common frequency for the entire radio zone, see Nakajima column 3, lines 63-67 and column 4, lines 1-13.

Applicant further argued that *"Nakajima doesn't relate to a plurality of reverse communication channels and a plurality of forward communication channels that utilize one common frequency, ..., the fact that claim 30 relates to a plurality of forward and reverse channels that utilize on common frequency may not be ignored."* Emphasis added.

Examiner respectfully disagrees, Nakajima implicitly have a plurality of mobile stations in the radio zone 2a (only one mobile 5a is shown for illustrative purposes); as discussed above, the radio zone uses one common frequency and since a communication channel between a mobile and the base station is defined either a reverse or forward based on the spreading code used, the limitation of *"a plurality of reverse communication channels and a plurality of forward communication channels that utilize one common frequency"* is taught by Nakajima, and thus not ignored as alleged by Applicant.

As to claims 34 and 43, Applicant had amended these claims to include first, second, third and forth channel, each one has a code to identify the channel ether a forward or reverse channel.

As discussed above, while Nakajima shows only one mobile within radio zone 2a, it implicitly discloses a plurality of mobile stations within the same radio zone 2a, in addition, the mobiles within the radio zone 2a use the same frequency, each communication channel between the mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel. Therefore, and contrary to Applicant's assertion, Nakajima teaches the added limitations to claims 34,

43. In addition to the above discussion, the spreading codes of Nakajima are different from each other, because that is needed for reducing interference based the orthogonality feature of the spreading codes, therefore all the codes used in at least the radio zone 2a are unique.

Similar argument Apply with regard to newly added claim 44-47, since this claims require the unique codes for each forward and each reverse channel. Nakajima implicitly have unique spreading codes for indicating the reverse and forward channel because that is required for the orthogonality between codes, as notoriously known in the art.

Examiner also notes that no response yet have been received to a suggestion raised during a personal interview on 7/16/2002 to review the specification for further clarification, the following are some confusing statement when taken in the context of the invention as a whole:

On page 6, lines 4-5: it is stated: "For a bi-directional transmission of data each user has a unique code for forward and reverse direction communication". It follows that only one code per user is used for both reverse and forward direction communication and not separate unique codes as in independent claims.

On the same page, lines 5-10, it is stated: " Spreading to transmit and despreading to receive the data with unique codes of Mbits allow multiple users to share a common channel. Thus, when data is transmitted from the base station 100 to the mobile station 102, all data with codes indicating a reverse direction communication are transmitted together through one channel by spreading. The transmitted data is

received at the mobile station 102 by despreading using the same unique codes. Similarly, when the data is transmitted from the mobile station 102 to the base station 100, all data with codes indicating a forward direction communication are transmitted together through one channel by spreading and received at the base station 100 by despreading using the same unique codes."

On page 6, line 18, it is stated: "Once transmitted, the appropriate data for each user can be recovered by multiplying the data stream with the same unique code used to convert the data".

On page 6, line 16, it is stated: "each users converts the data to be transmitted with a unique code either for forward or reverse direction communication". Examiner find this statement very confusing because, once the user convert the data to be transmitted with a unique code, only one direction is intended which is from the user to the base station, thus the meaning "either forward or reverse direction" is not clear.

It follows from the statements above, that the unique code for the bidirectional communication is uniquely used for spreading and despreading and in the same time indicating the reverse and the forward direction!!

In addition, claim 30 for example requires that each reverse communication channels having a unique code to identify the channel as a reverse channel, and each of the forward communication channels have a unique code to identify the channel as a forward communication channel, therefore, each code is unique and is used solely for indicating the direction of the channel. However, the same unique codes are understood to be the same code for spreading and despreading!

Examiner concludes that the specification is not clear about the nature of codes used, for example it is not clear if the unique code indicating a forward communication channel is the same code used for spreading and despreading (for transmitting and receiving), and the unique code that indicate the reverse communication channel is the same code used for spreading and despreading. Applicant is respectfully requested to clarify these matters, and clarify the conflicting statements in the specification as indicated above.

In view of the discussion above and given a reasonable broadest interpretation of the claim limitations, the rejection above is proper.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED ELALLAM whose telephone number is (571) 272-3097. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou Hassan can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AHMED ELALLAM
Examiner
Art Unit 2662
February 2, 2006



JOHN PEZZLO
PRIMARY EXAMINER